

AMENDED CLAIMS

Received by the International Bureau on 13 October 2004 (13.10.04).
Claims 1, 7, 8, 11, 24, 25 and 44 are amended; claims 3, 10 and 23 are cancelled; claims 2, 5, 6, 9, 12-22, 26-43 and 45-56 are unchanged (10 pages)

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1. A method for storing and transferring containers, comprising the steps of:
 - 5 a container information-receiving step for receiving information of the containers transmitted from a loading/unloading unit while the containers stacked in the container ship are unloaded by means of the loading/unloading unit;
 - 10 a transferring unit-moving step for moving a transferring unit to the loading/unloading unit having transmitted the information of the containers so that the containers are loaded onto the transferring unit;
 - 15 a storage-determining step for analyzing the received information of the containers to determine whether the containers placed on the transferring unit are to be moved to a stacking unit so that the containers can be stored or are to be moved to a taking-in/taking-out unit so that the containers can be removed from a container terminal;
 - 20 a shortest route-selecting step for analyzing and selecting the shortest route among various routes along which the transferring unit can be moved to the selected position on the basis of the determination as to whether the containers are to be stored or not at the storage-determining step; and
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a container-transferring step for moving the transferring unit to a position selected on the basis of the determination as to whether the containers are to be stored or not so that the containers can be transferred.

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2. The method as set forth in claim 1, further comprising the steps of:

10 a stacking position-selecting step for selecting a position on the stacking unit where the containers are to be stacked after storage of the containers is selected at the storage-determining step.

15 4. The method as set forth in claim 1, wherein the transferring unit placed at the shortest distance from the loading/unloading unit is selected in the transferring unit-moving step.

20 5. The method as set forth in claim 2, wherein the position on the stacking unit is selected on the basis of the lengths of the unloaded containers and depending upon when the containers are removed in the stacking position-selecting step.

25 6. The method as set forth in claim 5, wherein the containers are stacked on different stacking units on the

basis or the lengths of the containers, and containers necessary to be removed first are stacked such that the containers are closer to the taking-in/taking-out unit than containers necessary to be removed later.

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7. The method as set forth in any one of claims 1, 2, 4 to 6, wherein the control of the transferring unit is achieved in a wireless transmitting and receiving fashion.

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8. A method for storing and transferring containers, comprising the steps of:

a container information-receiving step for receiving information of containers to be loaded onto a container ship from a loading/unloading unit;

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a container position-identifying step for identifying the position of the containers on the basis of the received information of the containers;

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a transferring unit-moving step for moving a transferring unit to the identified position so that the containers can be loaded onto the transferring unit;

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a shortest route-selecting step for analyzing and selecting the shortest route among various routes along which the transferring unit can be moved from the place corresponding to the position of the containers to the loading/unloading unit; and

a container-loading step for moving the transferring unit having the containers placed thereon to the loading/unloading unit so that the containers can be loaded onto the container ship.

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9. The method as set forth in claim 8, wherein the transferring unit placed at the shortest distance from the place corresponding to the position of the containers is selected in the transferring unit-moving step.

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11. An apparatus for storing and transferring containers, comprising:

a loading/unloading unit for loading or unloading containers onto or from a container ship;

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a stacking unit for stacking the containers unloaded from the container ship by means of the loading/unloading unit and containers taken to a container terminal;

a transferring unit for transferring the containers between the loading/unloading unit and the stacking unit;

20 and

a central controlling unit for receiving information of the containers to be loaded onto or unloaded from the container ship from the loading/unloading unit to determine whether the containers are stacked or not and to identify the position of the containers and controlling the movement

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of the transferring unit so that the containers can be handled,

wherein the stacking unit comprises:

5 a steel-frame body constructed in a vertical multi-storied structure such that the steel-frame body has a plurality of stacking chambers defined therein, the steel-frame body having horizontal rails disposed at both sides in each stacking chamber and a lifting channel defined vertically in the steel-frame body;

10 a cage disposed in the lifting channel, the cage having horizontal rails corresponding to the horizontal rails of the stacking chamber;

15 a traveler mounted in the cage such that the traveler can be attached to or detached from the upper part of the container, the traveler being movable horizontally along the horizontal rails of the stacking chamber and the horizontal rails of the cage; and

20 lifting parts attached to the upper end of the steel-frame body for moving the cage upward or downward along the lifting channel.

12. The apparatus as set forth in claim 11, further comprising:

25 a taking-in/taking-out unit for taking the containers to the container terminal or removing the container out of

the container terminal, and

wherein the transferring unit is moved to the taking-in/taking-out unit through the stacking unit.

5 13. The apparatus as set forth in claim 11 or 12,
wherein the transferring unit comprises:

a railroad line connected between the lower part of the
loading/unloading unit and the taking-in/taking-out unit via

driving parts; and

a wireless transceiver electrically connected to the bogie control part for performing a wireless transmitting and receiving operation with the central controlling unit.

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21. The apparatus as set forth in claim 20, wherein the bogie body is provided at the upper surface thereof with a plurality of fixing protrusions such that the fixing protrusions can be securely inserted into the corner areas 10 of a large-sized container placed on the upper surface of the automatic bogie.

22. The apparatus as set forth in claim 20, wherein the bogie body is provided with rechargeable batteries for 15 supplying electric current to the bogie driving parts, respectively.

24. The apparatus as set forth in claim 11, wherein the traveler comprises:

20 a horizontal driving part including a main body disposed at the cage, and a plurality of driving rollers rotatably disposed at both sides of the main body such that the driving rollers are moved along the horizontal rails of the cage while being in rolling contact with the horizontal rails of the cage 25 by means of a driving motor fixed to the main body; and

holder parts formed at the lower surface of the main body such that the holder parts can be engaged in or disengaged from holes formed at the upper surface of the container.

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25. The apparatus as set forth in claim 11 or 24, wherein the stacking unit further comprises:

locking parts for locking the cage to the steel-frame body at the position where the horizontal rails of the 10 stacking chamber are level with the horizontal rails of the cage.

26. The apparatus as set forth in claim 25, wherein each of the lifting parts comprises:

15 a hydraulic motor mounted to the upper end of the steel-frame body;

a driving pulley that can be operated by means of the hydraulic motor; and

20 wire ropes connected to the cage such that the wire ropes can be wound by means of the driving pulley.

27. The apparatus as set forth in claim 26, wherein a plurality of guide rails are vertically disposed along the lifting channel, and a plurality of rollers are rotatably 25 attached to the outside of the cage such that the rollers can

be in contact with the guide rails.

28. The apparatus as set forth in claim 25, wherein each of the lifting parts comprises:

5 a lower fixed cylinder having an open lower end, the

a pair of adjusting bars mounted to the upper surface of the traveler such that the adjusting bars are inserted in the distance-adjusting holes, respectively, for adjusting the movable distance of the stopper plate.

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43. The apparatus as set forth in claim 42, wherein the traveler is provided with a guide tube surrounding the guide rod.

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44. The apparatus as set forth in claim 11 or 24, wherein the stacking unit comprises: a steel-frame stacking facility including a plurality of steel-frame bodies connected to each other such that floors of one of the steel-frame bodies communicate with floors of the other steel-frame body, respectively, each of steel-frame bodies having at least two stacking chambers disposed along both sides of the lifting channel, and

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wherein the traveler is moved horizontally from one of the lifting channels to the other lifting channel in the steel-frame stacking facility.

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45. The apparatus as set forth in claim 44, wherein the stacking unit further comprises:

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an introduction-preventing part for preventing the traveler provided at one of the lifting channels from being

STATEMENT UNDER PCT ARTICLE 19

Claim 1 has been amended herein to merger claims 1 and 3, claim 8 has been amended to merger claims 8 and 10, claim 11 has been amended to merger claims 11 and 23. Claims 7, 24, 25 and 44 are amended. Claims 3, 10 and 23 are canceled and claims 2, 4, 5, 6, 9, 12-22, 26-43, 45-56 are unchanged. The purpose of these amendment is to limit the scope of the claimed invention. These amendments should have no effect on the description and drawings.